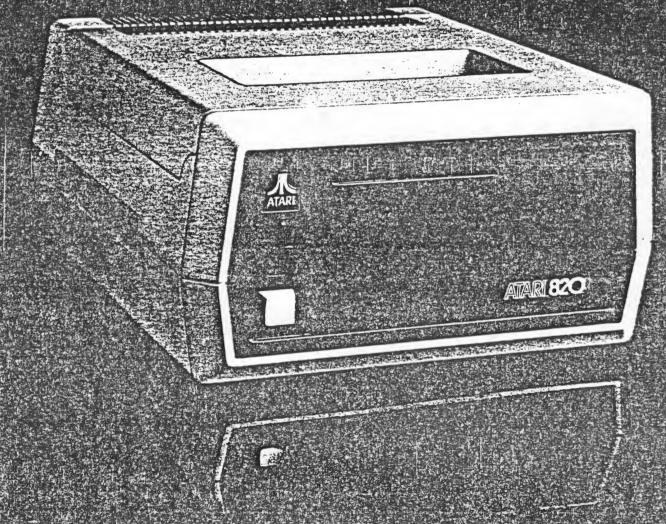
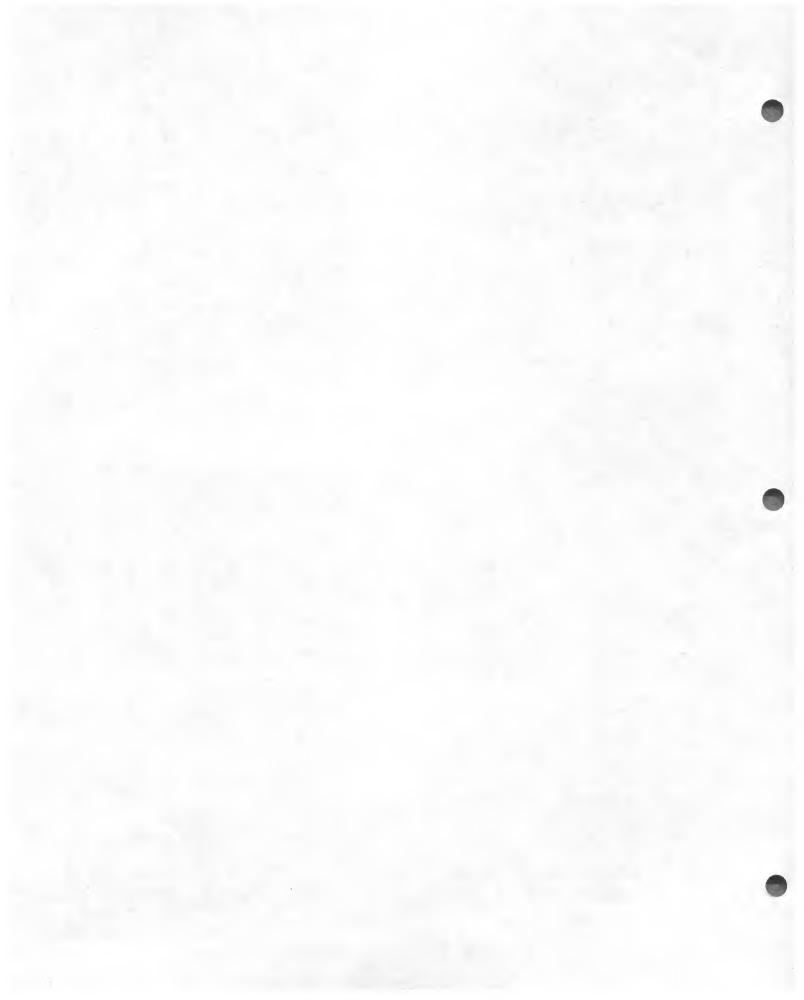
# ATARI 820 PRIMER

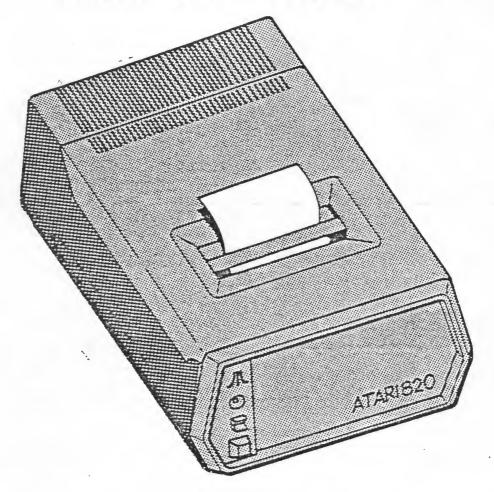




field service manual



# ATARI 820 PRINTER



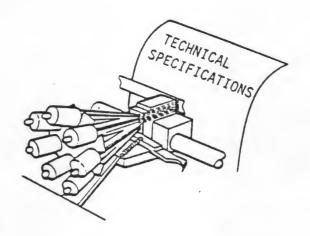
FIELD SERVICE MANUAL



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#### PRINT FORMAT

- 1. Printable Area: 3-1/3" wide
- 2. Column Capacity: 40 characters (pitch 12 characters per inch)
- 3. Line Spacing: 6 lines per inch nominal
- 4. Character Size: Height 0.123" approx.
- 5. Start-of-Print Margin Repeatability: +0.015"
- 6. Verticle Line Spacing: within 1/8 space on line to line; cumulative, within 1/2 space per 8"
- 7. Horizontal Dot-to-Dot Printing Accuracy (due to head velocity variations): +10%
- 8. Verticle Dot Alignment: +0.0025"
- 9. Font: 5x7 dot matrix

#### PRINT SPEED

- 1. Print Cycle: 800 msec. per line
- 2. Print Head Sweep Speed: 10.75 i.p.s. nominal
- 3. Dot-to-Dot Cycle Time: 1.3 msec.

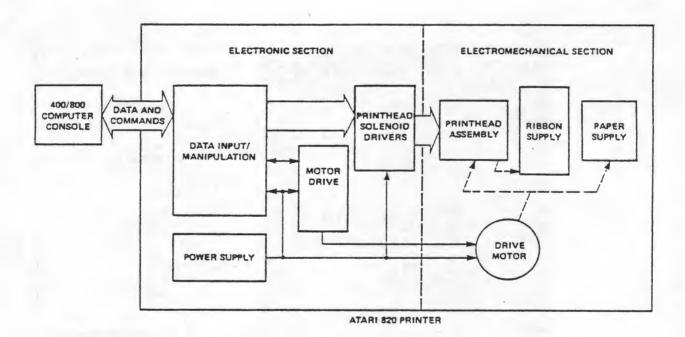
Print Direction - left-to-right
Print Category - high resolution impact printer



## THEORY OF OPERATION

The Atari 820 Printer is a 5x7 dot matrix high resolution impact printer. The printer consists of two major sections:

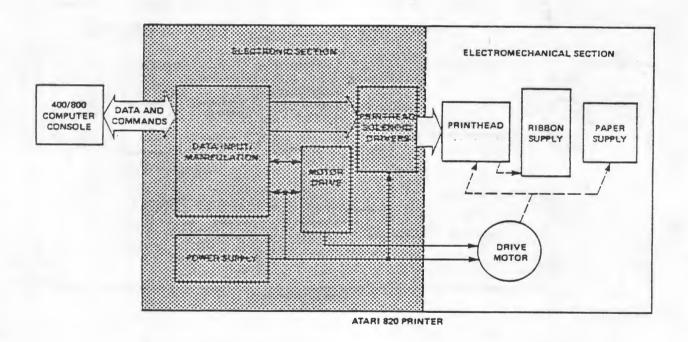
- 1. Electromechanical
- 2. Electronic



### THE ELECTROMECHANICAL SECTION

The Electromechanical Section consists of four basic subsections:

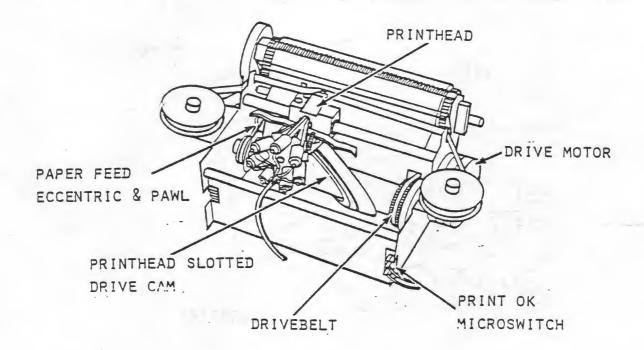
- 1. Drive Motor
- 2. Printhead
- 3. Ribbon Supply
- 4. Paper Supply



The printer uses an AC synchronous drive motor. The motor controls the printhead movement as well as the paper advance. Motor on/off periods are controlled by the Electronic Section of the printer.

The motor transports and locates the printhead using a drivebelt combined with an elliptically slotted cam. This drives the printhead across the print area at a constant 1.75 i.p.s. rate.

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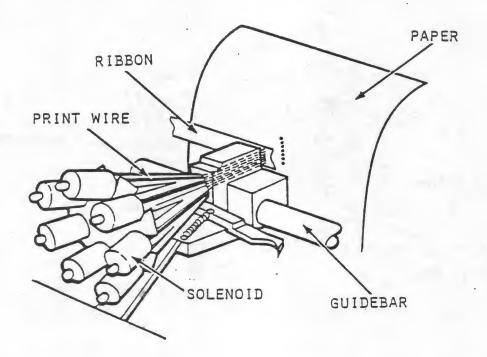


Attached to the left end (front view) of the slotted cam is a paper feed eccentric and pawl responsible for advancing the paper one line (approx. 1/6 inch) for each sweep and return of the printhead.

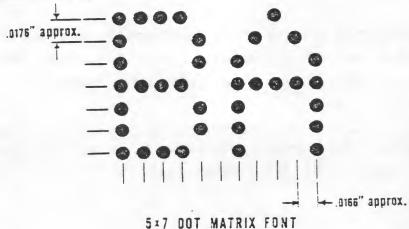
A "print OK" microswitch provides feedback to the printer's electronics section. This feedback identifies when the printhead is in the "home" (left-most) position, ready to print its next line.

Mechanical interlocks prevent the paper from advancing except when the printhead is in the "home" position.

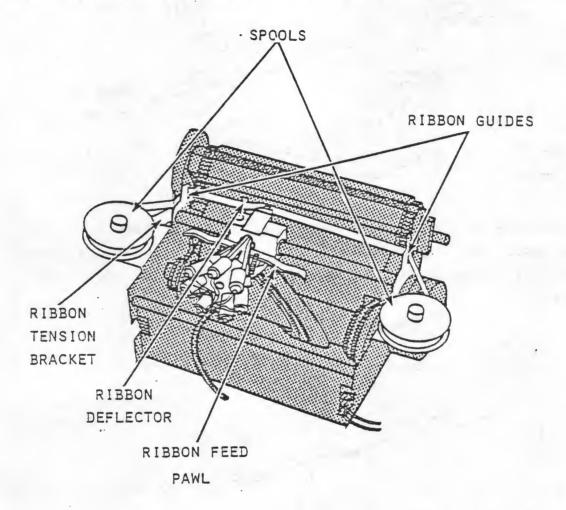
The printhead consists of seven solenoids mounted into a molded carriage, each solenoid controls a separate print wire, with the molded carriage locating the seven print wires into a verticle seven-dot column.



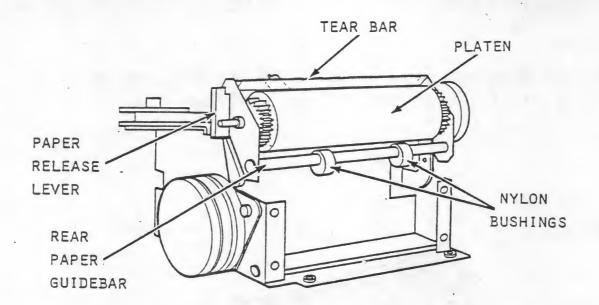
The printer's electronics section provides drive currents to each solenoid separately; and, in combination with the printhead's constant sweep rate, produces the 5x7 dot matrix font as shown here:



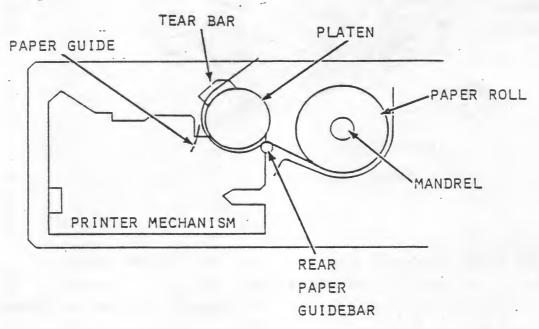
The printer ribbon supply and ribbon take up subsystem is driven by a feed pawl mounted onto the printhead.



When the ribbon reaches its end, the empty ribbon spool's resistance to further rotation forces the pawl to switch positions. The new pawl position reverses the ribbon direction.



As previously mentioned, the printhead drive is also the basis of the paper supply mechanism. The paper roll located in the top half of the printer casing supplies paper into the platen assembly.

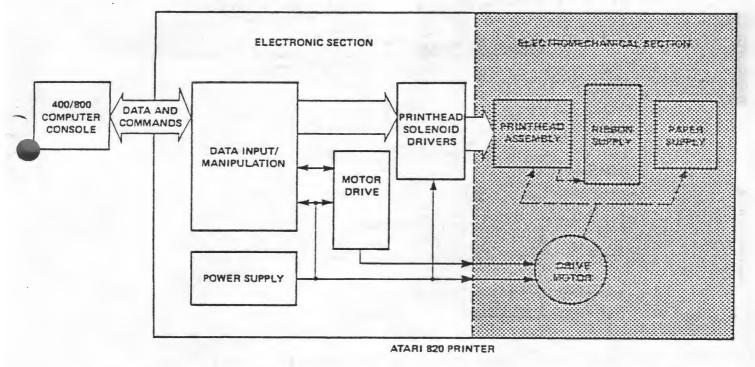


The paper is laterally located, as it approaches the platen, by two adjustable nylon bushings. Next the paper passes beneath the platen and up through a flexible plastic paper guide. Finally, the paper passes up between the clear plastic tear bar and the platen.

#### THE ELECTRONIC SECTION

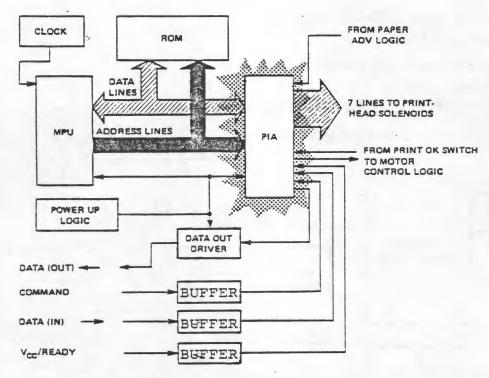
The printer's Electronic Section also consists of four subsections which are mounted on two printed circuit boards. The four subsections are:

- 1. Data Input/Manipulation
- 2. Motor Drive
- 3. Printhead Solenoid Drivers
- 4. Power Supply



The data input/manipulation subsection receives serial digital data and commands from the computer console, and provides feedback signals to the console. Any signals entering or leaving the printer are conditioned through a driver or buffers, as applicable. The Peripheral Interface Adapter (PIA) is an IC with several functions:

- 1. Data input serial to parallel conversion
- 2. Data output parallel to serial conversion

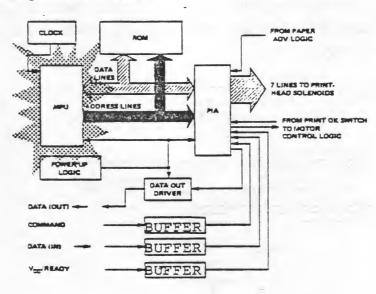


- 3. Temporary data storage
- 4. Printer subsection interface

The buffers provide line static protection for the PIA, a MOS device.

A print "timeout" prevents damage to the solenoids due to heat buildup from repeated energizing. For this reason, the printer will pause at varying intervals throughout normal operation.

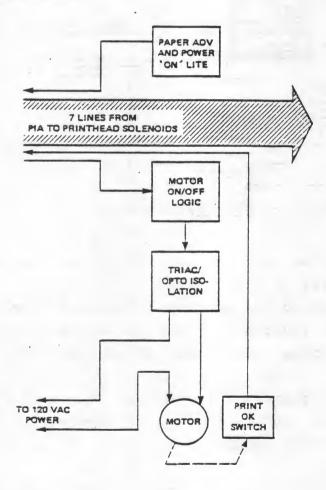
The printer's Microprocessor Unit (MPU) receives and interprets the parallel data and signals from the PIA and the printer's Read Only Memory (ROM). The MPU times the operation of the printer through external 1 MHz crystal clock circuitry. The MPU is responsible for:



- 1. Notifying the computer console of the receipt and correctnesss of input data.
- Recognition of the printhead solenoid codes and sequences required to print the computer data. Also, it draws those codes from ROM and applies them to PIA.
- Interpreting input signals from the other electronic subsections, and responding as necessary.
- 4. Printer system timing.

The specific printhead solenoid codes as well as other necessary operating data is stored in ROM for use by the MPU.

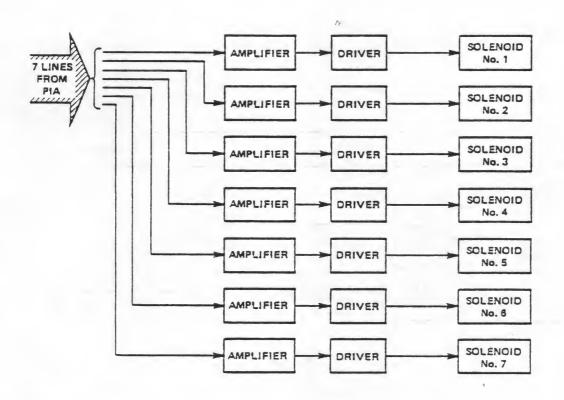
Power up logic in this section prevents the printer from printing or outputing erroneous data during the unsequenced operations immediately following printer power up. The motor drive subsection applies 120 VAC to the printer's drive motor. Power is applied through the optoisolated triac control as required by the MPU for printhead drive and paper line feed. The motor position, through the printhead drive cam, controls the "print OK" switch. This switch, in turn, provides the feedback to the MPU telling when each line feed has been completed.



The PAPER ADV. button initiates a line advance through the PIA/MPU and motor drive loop.

#### PRINTHEAD SOLENOID DRIVERS

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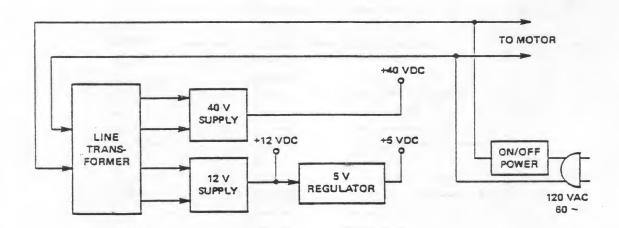


The printhead solenoid driver subsection converts low-level parallel solenoid codes from the PIA into high-level currents. These currents are then applied to the printhead solenoids.

The power supply subsection supplies four different power values:

- 1. 120 VAC
- 2. +40 VDC unregulated
- 3. +12 VDC unregulated
- 4. +5 VDC regulated

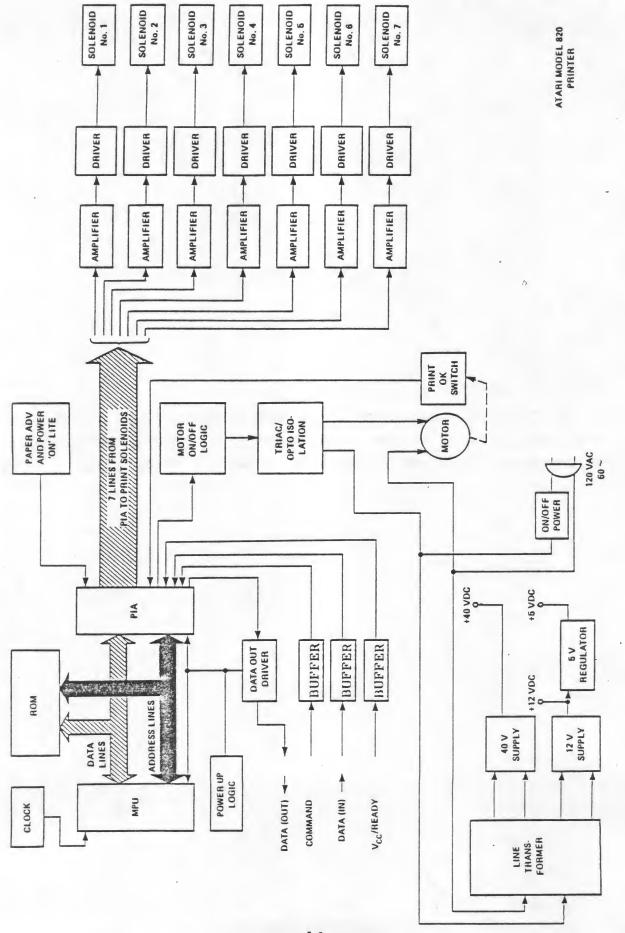
#### POWER SUPPLY

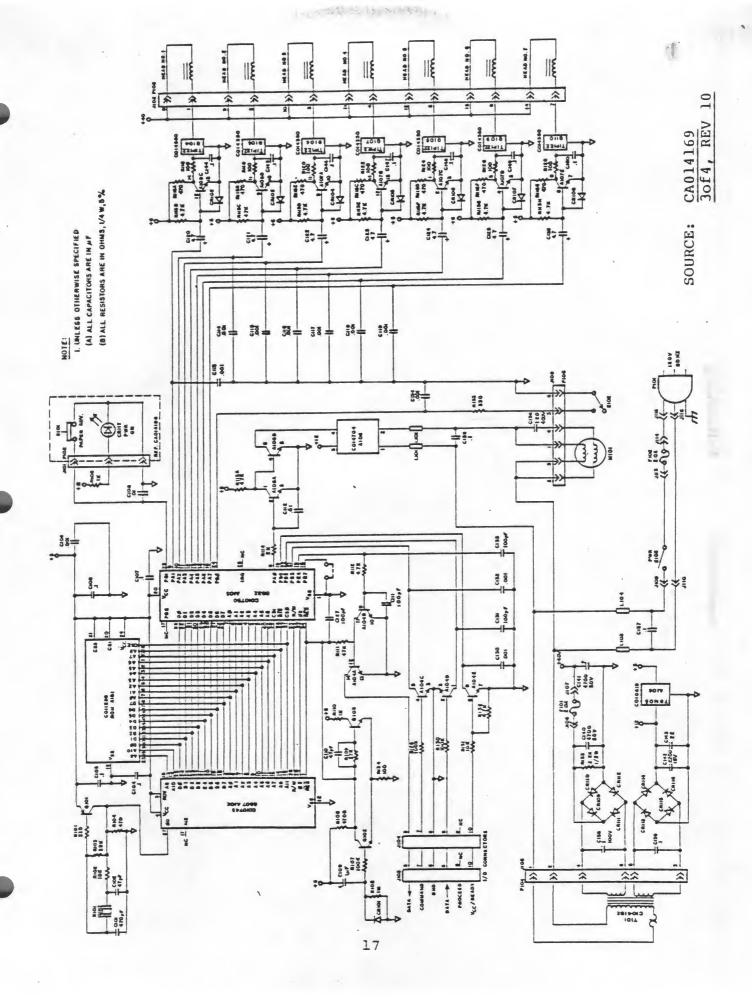


The same 120 VAC applied to the motor drive subsection triac is also applied to a transformer primary. The twin secondaries are each applied to full wave bridge rectifiers. One bridge section provides a filtered, unregulated +40 VDC. The second bridge section provides a filtered unregulated +12 VDC. The +12 VDC is also applied to a +5 volt regulator-IC chip, which results in the +5 VDC regulated supply.

# BLOCK DIAGRAM AND SCHEMATIC

On the following two pages are a block diagram and schematic for the printer. Further understanding of the system's operation can be obtained by comparing these to each other.







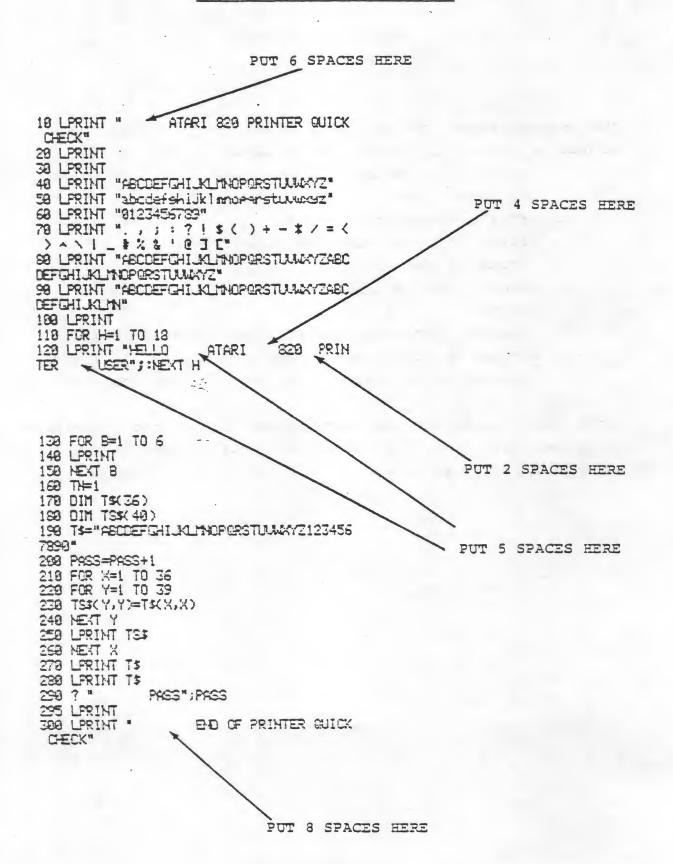
# ATARI 820 PRINTER QUICK CHECK

The test procedure for the Atari 820 Printer verifies the printer's ability to perform the following functions:

- 1. Print all 26 letters of the alphabet in both upper and lower case.
- 2. Print alphanumeric symbols.
- 3. Print a full 40 character line, terminating in an automatic line advance.
- 4. Maintain column linearity down several lines of print.
- 5. Provide single and multiple line paper advances.
- 6. Produce multiple repetitions of the same character without any noticable reduction of print quality.

Enter the program into the computer and run it until necessary adjustments are made. Be sure to save the program on a disk or cassette tape before turning off the computer console.

#### PRINTER QUICK CHECK PROGRAM



**ABCDEFGHIJKLINOPGRSTUUNKYZ** 

HELLO



THIS IS A SAMPLE OF THE PRINT OUT YOU SHOULD GET WHEN USING THE "Quick Check" PROGRAM.



abcdefshijklanopenstuuccez 8123456789 .,;:?!\$()+-\$/=<>^\\\_ #%&'@3[ ASCDEFCHIJKLM+OPORSTUMXYZABCDEFCHIJKLM **OPORSTUUMXYZ** ABCDEFGHIJKLINOPORSTUNKYZABCDEFGHIJKLIN 829 PRINTER USER HELLO ATARI ATARI 829 PRINTER USER HELLO USER USER HELLO ATARI 829 PRINTER HELLO ATARI 829 PRINTER PRINTER 828 USER HELLO ATARI HELLO ATARI 829 PRINTER USER 823 PRINTER WER HELLO ATARI USER HELLO ATARI 829 PRINTER WER HELLO PRINTER ATARI 823 HELLO ATARI 823 PRINTER USER PRINTER USER USER HELLO ATARI 823 HELLO ATARI 829 PRINTER USER HELLO ATARI 823 PRINTER HELLO ATARI 829 PRINTER USER USER HELLO ATARI 829 PRINTER HELLO ATARI 823 PRINTER **ATARI** PRINTER USER

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END OF PRINTER QUICK CHECK



ATARI 820 PRINTER
TROUBLESHOOTING GUIDE

## CAUTION

Chassis and signal grounds <u>ARE</u>

<u>NOT</u> common on this unit. Reference all test equipment to the proper ground.



SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. PRINTER WILL NOT TURN ON.	A. BLOWN FUSE  B. DEFECTIVE PWR  SWITCH	A. REPLACE FUSE  B. REPLACE SWITCH
	C. DEFECTIVE TRANS- FORMER	C. REPLACE TRANSFORMER
٥	D. ELECTRICAL MAL- FUNCTION - POWER SWITCH AND/OR MAIN PCBS	D. REPLACE AND/OR TROUBLE- SHOOT PCBS
2. PRINT MOTOR STALLS	A. EXCESSIVE DRIVEBELT TENSION	A. ADJUST DRIVEBELT TENSION
	B. BAD CRIMP ON ONE OR MORE A.C. MOTOR WIRES	B. VERIFY CRIMPS ARE GOOD  ONE WIRE/PIN INTERCONNECT  AND THAT PINS ARE PROPERL  INSERTED INTO CONNECTOR
	C. DEFECTIVE AC MOTOR	HOUSING  C. REPLACE MOTOR
	D. ELECTRICAL MALFUNC- TION - MAIN PCB	D. REPLACE AND/OR TROUBLE- SHOOT PCB
3. PRINT MOTOR STARTS BUT DOESN'T STOP. NO	A. DEFECTIVE PRINT OK SWITCH	A. REPLACE SWITCH
PRINTING OCCURS	B. DAMAGED PRINT OK SWITCH WIRE	B. CHECK ALL PRINT OK SWITCH WIRES FOR ELECTRICAL CONTINUITY
	C. MISADJUSTED PRINT OK SWITCH	C. VERIFY SWITCH TRANSFERS WHEN ROLLER ON SWITCH ARM TRANSFERS BETWEEN HIGH AND LOW POSITIONS ON THE PRINTHEAD DRIVE CA

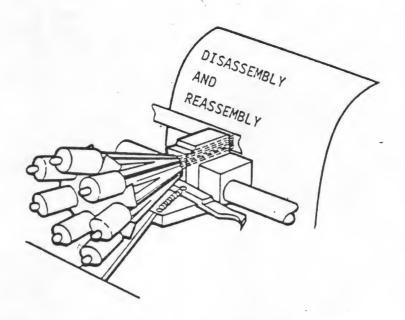
SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
	D. ELECTRICAL MALFUNC- TION - MAIN PCB	D. REPLACE AND/OR TROUBLE- SHOOT PCB
LINE FEEDS	A. PAPER SLIPPAGE  B. DEFECTIVE PAPER DRÎVE	A. CLEAN PLATEN AND/OR RE- PLACE PRESSURE ROLL SPRINGS B. REPLACE DEFECTIVE
	COMPONENT(S)  C. IMPROPER DRIVEBELT  TENSION	COMPONENT(S)  C. ADJUST DRIVEBELT TENSION
5. MISSING DOTS	A. RIBBON IMPROPERLY INSTALLED  B. PRINT HEAD-TO-PLATEN GAP EXCESSIVE  C. BAD WIRE TO PIN CON- NECTIONS ON PRINTHEAD WIRE HARNESS  D. ELECTRICAL MALFUNC- TION - MAIN PCB	A. INSTALL RIBBON COR- RECTLY  B. ADJUST GAP TO .012" TO .015" RANGE  C. VERIFY CONTINUITY WIRE/PIN INTERCONNECTS AND THAT PINS ARE PROP- ERLY INSERTED INTO CON- NECTOR HOUSING  D. REPLACE AND/OR TROUBLE- SHOOT PCB
	E. DEFECTIVE OR JAMMED PRINTHEAD SOLENOID	E. CHECK SOLENOID FOR JAM  BY PUSHING BACK END WITH  YOUR FINGER; REPLACE  PRINTHEAD IF JAM CANNOT  BE CLEANED OR SOLENOID  IS DEFECTIVE.

- 6. EXCESSIVE VARIATION IN CHARACTER WIDTHS
- A. DRIVE BELT TENSION TOO LOOSE
- B. START-TO-PRINT DISTANCE (DISTANCE FROM
  1ST DOT POSITION TO
  INSIDE OF MECHANISM
  LEFT SIDEPLATE IS
  OUT OF TOLERANCE
  (.965± .060")
- C. PRINTHEAD BINDING ON GUIDEBAR

- A: ADJUST DRIVEBELT TENSIO
- B. ADJUST PRINT OK SWITCH
  POSITION TO CONNECT
  START-TO-PRINT LOCATION

C. ALIGN PRINTHEAD SLIDING BUSHINGS, LUBRICATE GUIDEBARS



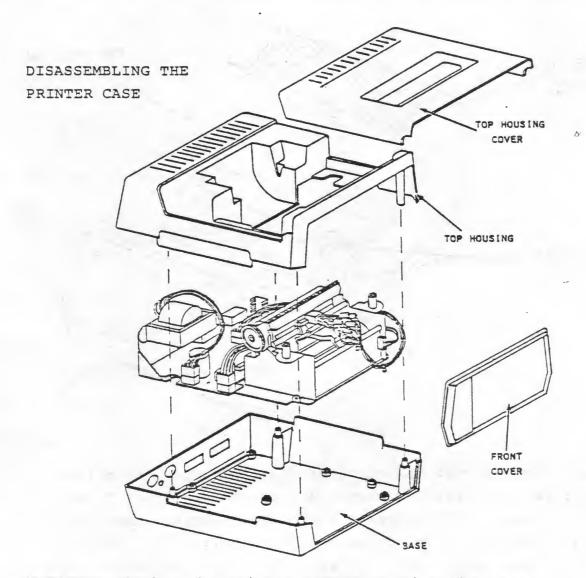


The level of printer disassembly necessary will vary with the specific problem encountered. Some procedures list steps which are procedures by themselves ie. "Disassemble the printer case". When this occurs, turn to that procedure and follow it step by step before proceeding.

#### SPECIAL NOTES:

- 1. Refer to the Printer Operators Manual for paper and ribbon installation procedures.
- 2. To prevent thread damage, use the specified screws.
- 3. Overtightening screws will strip the threads on plastic and aluminum parts. Do not exceed 6 inch pounds for plastic parts and 10 inch pounds for aluminum parts.
- 4. Major electrical connections are made with wire harnesses and terminated in both polarized and non-polarized disconnect plugs and fastons. Be sure all plugs are correctly connected before trying to operate the printer.
- 5. When reassembling, insure that all wiring harnesses are routed in such a way as to prevent them from being pinched between reassembled parts.

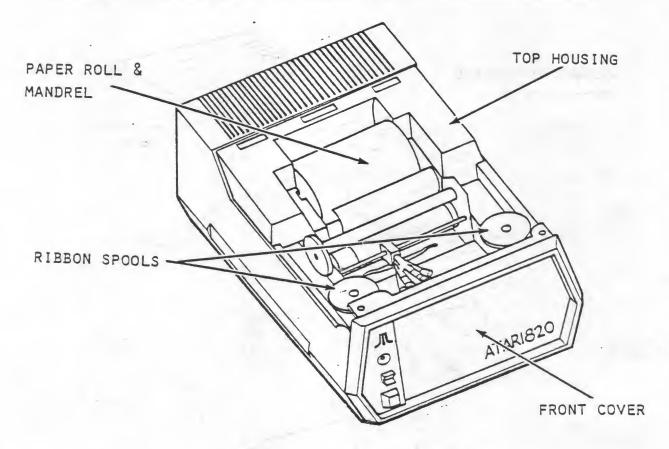




WARNING: Unplug the printer BEFORE opening the case.

- 1. Turn the printer upside down and lay it on a surface that will not scratch or damage the case.
- 2. Remove the four rubber feet to expose the case screws.
- 3. Remove the four screws.
- 4. Hold the top housing and base together and turn the printer rightside up.

5. Remove the top housing cover and lift out the paper roll, mandrel (central shaft of paper roll), and ribbon spools.



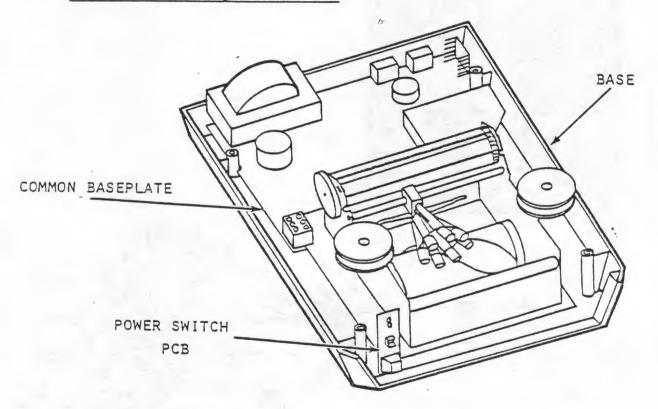
CAUTION: Insure that the printhead is in its left-most position before attempting to move the paper into or out of the printer platen. The printhead can be moved across the print area by carefully rotating the printhead drive cam. Rotate the tip of the cam toward the rear of the printer only. Rotating the cam in the reverse direction may damage the print OK switch.

- 6. Remove the top housing from the base.
- 7. Lift the front cover from the base.
- 8. Remove the two screws securing the power switch PCB to the front cover.

# REMOVING THE COMMON BASEPLATE

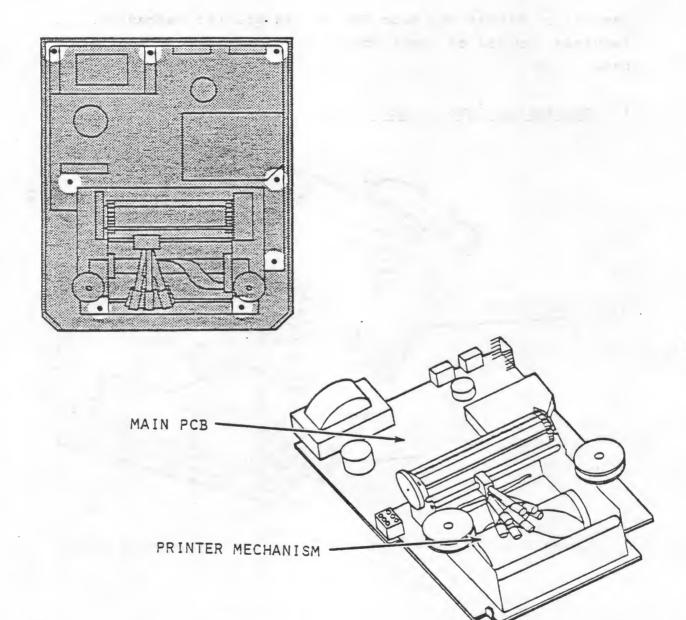
Removal of either the main PCB or the printer mechanism requires removal of their common baseplate from the printer base.

### 1. Disassemble the printer case.

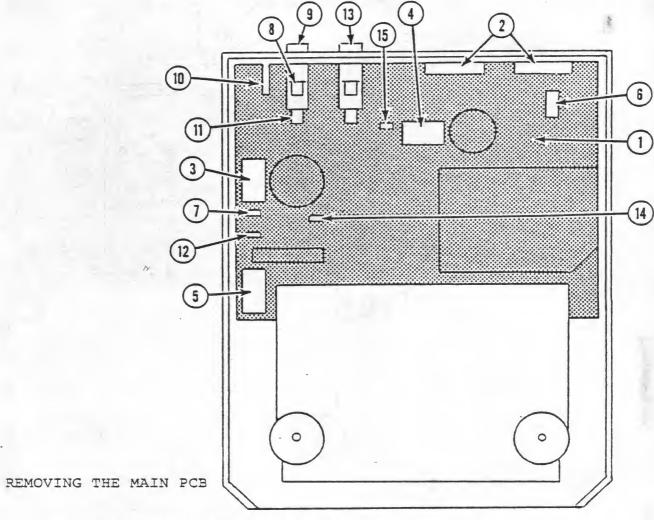


2. Remove the two fuses from the rear of the printer base.

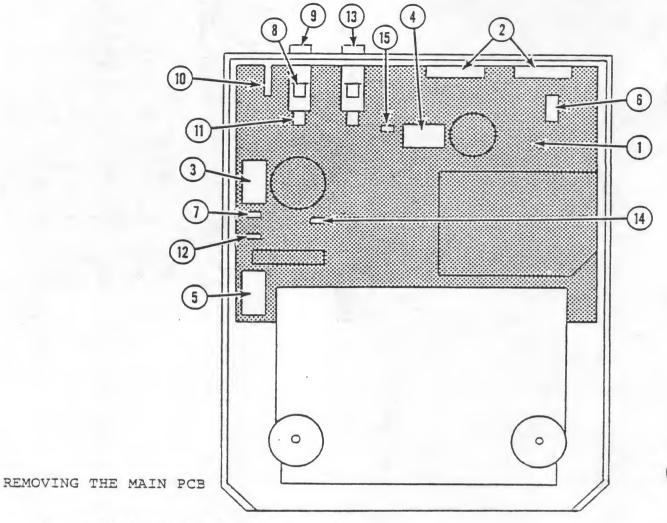
3. Locate and remove the eight screws securing the common baseplate to the base.



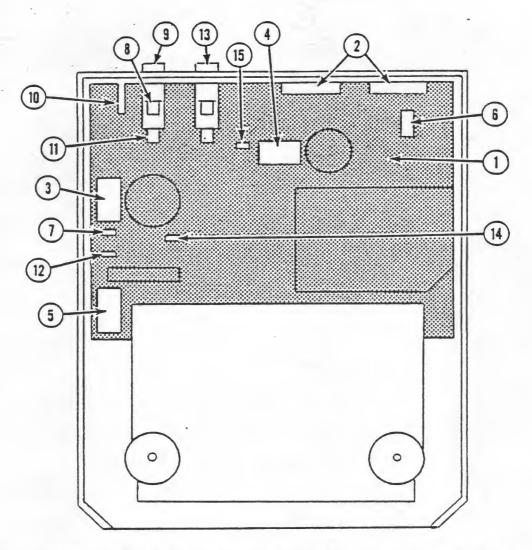
4. Lift the baseplate from the base. Note that each of the bosses in the base is topped with a rubber isolation washer.



- 1. Disassemble the printer case.
- 2. Remove the common baseplate from the printer base.
- 3. Disconnect the transformer wiring harness (#3) from the main PCB.
- 4. Remove the two bolts holding the transformer to the baseplate. Lift the transformer out.
- 5. Disconnect the power switch PCB wiring harness (non-polarized white, yellow and orange, #6) including the black (#7) and red (#8) leads (fastons) from the main PCB and fuseholder.
- 6. Disconnect the print motor/print OK switch wiring harness (polarized - red, white, blue and black, #5) from the main PCB.
  - 7. Disconnect the printhead wiring harness (polarized gray and brown, #4) from the main PCB.



- 1. Disassemble the printer case.
- 2. Remove the common baseplate from the printer base.
- 3. Disconnect the transformer wiring harness (#3) from the main PCB.
- 4. Remove the two bolts holding the transformer to the baseplate. Lift the transformer out.
- 5. Disconnect the power switch PCB wiring harness (non-polarized white, yellow and orange, #6) including the black (#7) and red (#8) leads (fastons) from the main PCB and fuseholder.
- 6. Disconnect the print motor/print OK switch wiring harness (polarized - red, white, blue and black, #5) from the main PCB.
- 7. Disconnect the printhead wiring harness (polarized gray and brown, #4) from the main PCB.



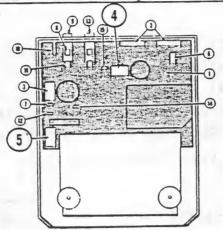
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- 8. Disconnect the remaining red (#14) and black (#15) fuse leads (fastons) from the main PCB.
- 9. Disconnect the single AC powerline lead (#12, faston) from the main PCB.
- 10. Locate and remove the four screws securing the main PCB to the baseplate.
- 11. Lift the main PCB away from the baseplate. Note the insulating plate between the PCB and the baseplate.

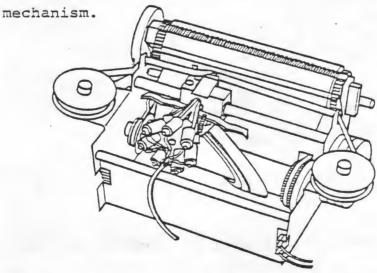
CAUTION: The main PCB carries MOS devices and can be damaged unless handled with proper static protection.



- 1. Disassemble the printer case.
- 2. Remove the common baseplate from the printer base.



- 3. Disconnect the print motor/print OK switch wiring harness (polarized - red, white, blue and black, #5) from the main PCB.
- 4. Disconnect the printhead wiring harness (polarized gray and brown, #4) from the main PCB.
- 5. Turn the baseplate on its side to locate and remove the three screws securing the printer mechanism to the baseplate. Be very careful not to damage the

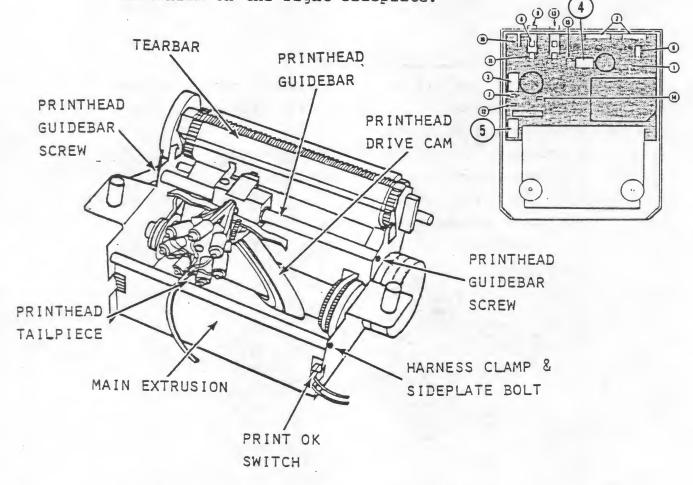


6. Remove the mechanism from the baseplate and set the mechanism upright.

#### REMOVING THE PRINTHEAD

- 1. Disassemble the printer case.
- 2. Disconnect the printhead wiring harness (polarized gray and brown, #4) from the main PCB.

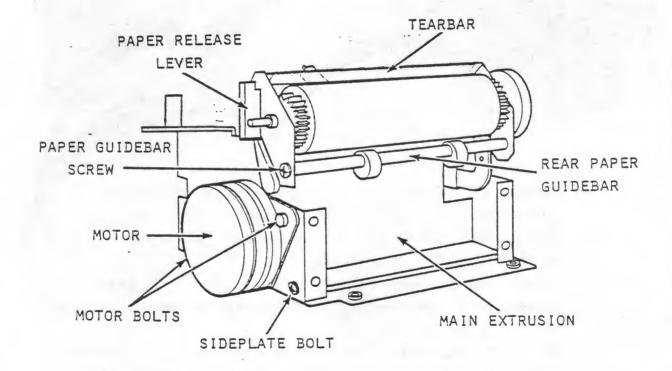
3. Locate and remove the screw or bolt securing the harness clamp to the forward corner of the printer mechanism on the right sideplate.



- 4. While supporting the printhead, locate and remove the two hex head screws securing the printhead guidebar to the mechanism sideplates.
- 5. Lift the printhead and guidebar from the mechanism, noting that you must disengage the printhead tailpiece from its guideslot.
- 6. Slide the printhead off one end of the guidebar.

#### REMOVING THE PRINT MOTOR

- 1. Disassemble the printer case.
- 2. Remove the common baseplate from the printer base.
- 3. Disconnect the print motor/print OK switch wiring harness (polarized - red, white, blue and black, #5) from the main PCB.
- 4. Desolder the print OK switch leads (red and blue)

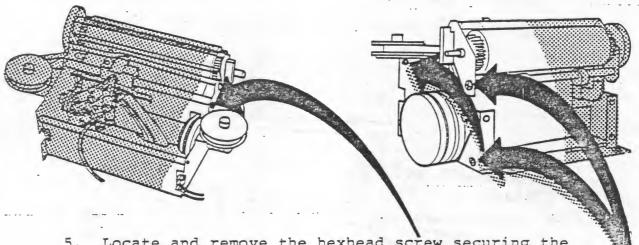


from the microswitch.

- 5. Locate and remove the two screws securing the print motor to the printer mechanism right sideplate.
- 6. Pull the motor from the sideplate, being careful not to damage the drive belt when disengaging it from the motor drive spur.

#### REMOVING THE PRINT OK SWITCH

- 1. Disassemble the printer case.
- 2. Remove the common baseplate from the printer base.
- 3. Remove the printer mechanism from the baseplate.
- 4. Desolder the print OK switch leads (red and blue) from the microswitch.



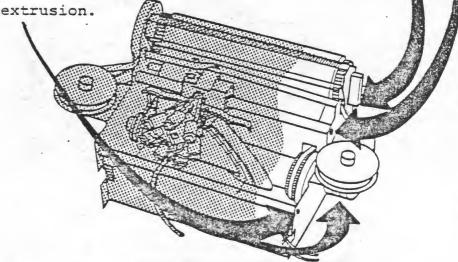
- Locate and remove the hexhead screw securing the printhead guidebar to the mechanism right sideplate.
- 6. Locate and remove the screw securing the rear paper guidebar to the right sideplate.
- 7. Locate and remove the upper front and lower rear screws securing the right sideplate to the mechanism main extrusion.
- 8. Carefully separate the sideplate from the main extrusion just enough to disengage the microswitch from the sideplate locating tabs.

NOTE: The paper tearbar and printhead drive cam will disengage from the sideplate during this step. Also, the paper release lever return spring may fall from its position between the main extrusion and the lever arm (attached to the sideplate).

9. Remove the microswitch.

#### REMOVING THE DRIVEBELT

- 1. Disassemble the printer case.
- 2. Remove the common baseplate from the printer base.
- 3. Remove the printer mechanism from the baseplate.
- 4. Locate and remove the hexhead screw securing the printhead guidebar to the mechanism right sideplate.
- 5. Locate and remove the screw securing the rear paper guidebar to the right sideplate.
- 6. Locate and remove the upper front and lower rear screws securing the right sideplate to the mechanism main extrusion.



7. Carefully separate the sideplate from the main extrusion just enough to disengage the printhead drive cam from the sideplate and leave enough clearance to slip the drivebelt off the cam.

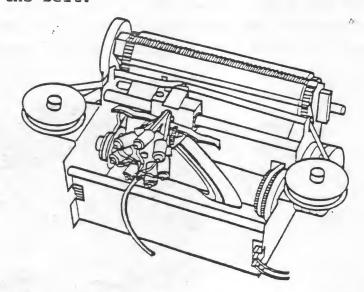
NOTE: The paper tearbar and print OK switch may disengage from the sideplate during this step. Also, the paper release lever return spring might fall from its position between the main extrusion and the lever arm (attached to the sideplate).

- 8. Disengage the drivebelt from the print motor drive spur.
- Slip the belt off the end of the printhead drive cam.

#### REASSEMBLY

#### REPLACING THE DRIVEBELT

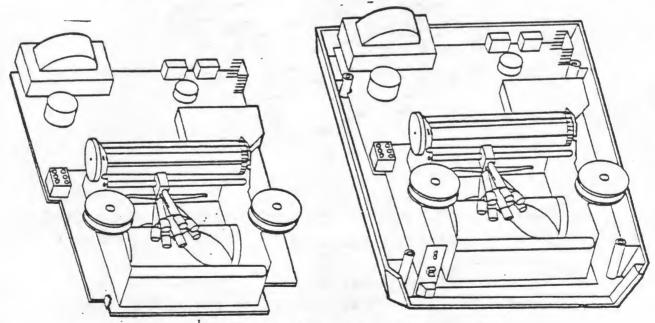
 Slip the drivebelt over the end of the printhead drive cam, being careful not to stretch or damage the belt.



- 2. Slip the belt onto the print motor drive spur.
- 3. Insure that a foam pressure pad is attached to the left side of the print OK switch position on the print mechanism main extrusion.
- 4. Position the tearbar, printhead drive cam, paper release lever return spring and print OK switch to fit to the mechanism right sideplate and main extrusion. The print OK switch arm should point upward and into the mechanism.
- 5. Carefully slide the sideplate into position, being careful to insure that the switch arm roller rides on the drive cam surface.

6. Install, and tighten the two screws securing the sideplate to the main extrusion (upper front/#8 -32 x 3/8 PHIL HD, also secures the printhead wiring harness clamp; lower rear/#8 - 32 x 5/16 PHIL HD).

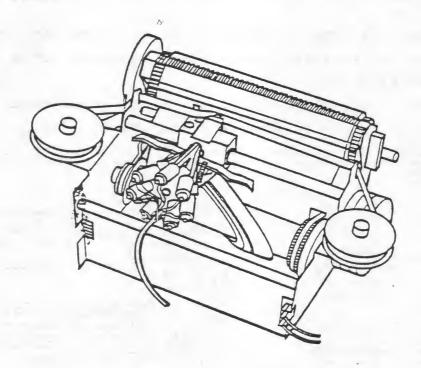
- 7. Install but only lightly tighten the 3/16 hexhead screw securing the printhead guidebar to the side-plate.
- 8. Install and tighten the screw securing the rear paper guidebar to the sideplate (#8 32 x 5/16 PHIL HD).
- 9. Insure that the drivebelt is cogged into both the print motor drive spur and the printhead drive cam notches.
- 10. Insure that all parts are correctly positioned and nothing in the printer mechanism is binding.
- 11. Assemble the printer mechanism to the common base-plate.



- 12. Attach the baseplate to the printer base.
- 13. Refer to the ADJUSTMENTS section of this manual and complete the drivebelt adjustment procedure.
- 14. Assemble the printer case.

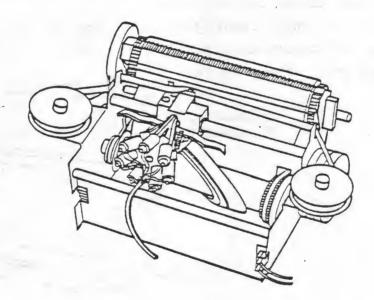
#### INSTALLING PRINT OK SWITCH

- Position the microswitch onto the two right sideplate locating tabs. The switch arm should point upward and into the mechanism.
- 2. Insure that a foam pressure pad is attached to the left side of the switch position on the main extrusion.



- 3. Position the <u>tearbar</u>, <u>printhead drive cam</u> and <u>paper</u> release lever return spring to fit to the mechanism sideplate.
- 4. Carefully slide the sideplate into position, being careful to insure that the switch arm roller rides on the printhead drive cam surface.
- 5. Install and tighten the two screws securing the sideplate to the main extrusion (upper front/#8 32 x 3/8 PHIL HD, also secures the printhead wiring harness clamp; lower rear/#8 32 x 5/16 PHIL HD).

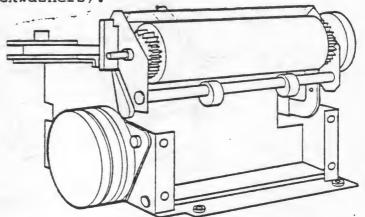
- 6. Install but only lightly tighten the 3/16 hexhead screw securing the printhead guidebar to the side-plate.
- 7. Install and tighten the screw securing the rear paper guidebar to the sideplate (#8 32 x 5/16 PHIL HD).
  - 8. Insure that all parts are correctly positioned and nothing in the printer mechanism is binding.
  - Solder the two microswitch leads (red middle terminal; blue - bottom terminal).



- 10. Assemble the printer mechanism to the common base-plate.
- 11. Attach the baseplate to the printer base.
- 12. Refer to the ADJUSTMENTS section of this manual and complete the drivebelt adjustment procedure.
- 13. Assemble the printer case.

#### REPLACING PRINT MOTOR

- 1. Insure that the drive spur is correctly installed on the motor shaft (flared end away from the motor).
- 2. Slide the motor into position on the printer mechanism right sideplate. The motor power leads should exit from the top of the motor.
- 3. Being careful to not stretch or damage the drivebelt, put the belt onto the motorshaft drive spur. The belt should cog into both the drive spur and the printhead drive cam notches.
- 4. Install but only lightly tighten the two screws securing the motor to the sideplate (#8 32 x 1/4 PHIL HD with star lockwashers).

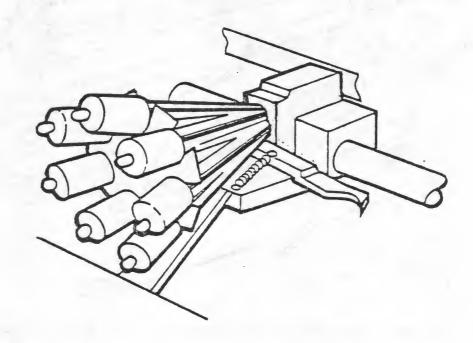


- 5. Solder the two print OK switch leads (red middle terminal; blue bottom terminal).
- 6. Assemble the printer mechanism to the common base-plate.
- 7. Attach the baseplate to the printer base.
- 8. Refer to the ADJUSTMENTS section of this manual and complete the drivebelt adjustment procedure.
- 9. Assemble the printer case.

#### INSTALLING PRINTHEAD

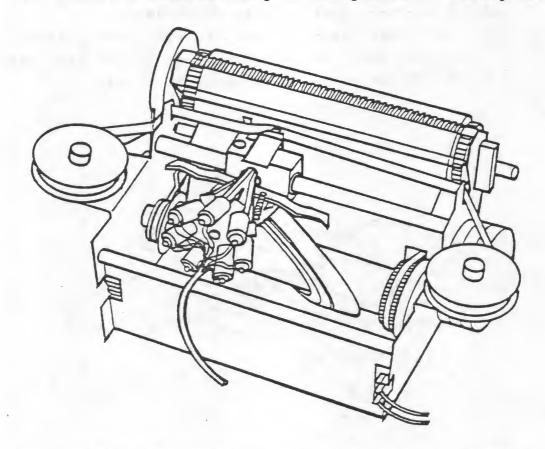
1. Lubricate the following items with IBM#23, Lubriplate #70 or an equivalent lubricant:

- a. Printhead inner sliding bushings.
- b. Printhead tailpiece and the tailpiece guideslot in the front of the printer mechanism main extrusion.
- c. Printhead drive cam elliptical groove.



- 2. Slide the printhead onto the guidebar. The printhead should move freely on the bar. If it does not, hold the printhead on one end of the bar and firmly tap the other end on a hard surface. This will seat the head bushings with the guidebar.
- 3. Put the printhead tailpiece into its mechanism extrusion guideslot and lower the printhead and guidebar into position. Insure that the metal stub on the underside of the printhead is positioned in the elliptical groove of the printhead drive cam.

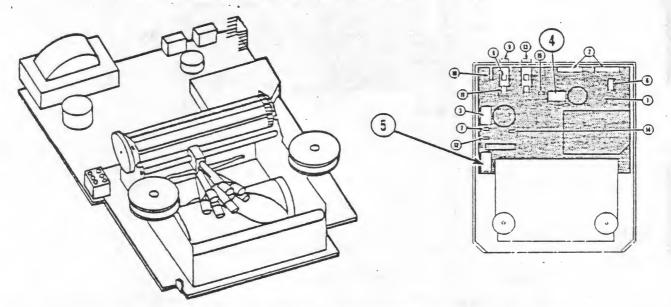
- 4. Install but only lightly tighten the two 3/16 hexhead screws securing the guidebar to the printer mechanism frame.
- 5. Attach a harness clamp to the printhead wiring harness.



- 6. Install the harness clamp under the upper forward corner screw (#8 - 32 x 3/8 PHIL HD) of the mechanism right sideplate.
- 7. Connect the printhead wiring harness (polarized gray and brown) to the main PCB (middle black socket).
- 8. Attach the common baseplate to the printer base.
- 9. Assemble the printer case.

#### ASSEMBLING PRINTER MECHANISM

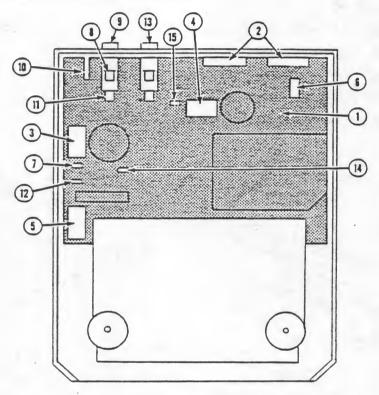
- Carefully lay the printer mechanism upside down on a surface in a way that will prevent damage to the mechanism.
- 2. Turn the common baseplate upside down and locate it over the mechanism such that the three screw holes line up.
- 3. Install the three screws ( $\#8-32 \times 3/8$  PHIL HD) and lockwashers (#8 split ring).
- 4. Lay the baseplate/mechanism assembly on its side and tighten the screws.
- 5. Turn the baseplate rightside up.



- 6. Assemble the main PCB to the baseplate, if necessary.
- 7. Connect the printhead wiring harness (polarized gray and brown) to the main PCB (black socket, #4, near the middle of the PCB).
- 8. Connect the print motor/print OK switch wiring harness (polarized red, white, blue and black) to the main PCB (left side, forward corner white socket #5).
- 9. Attach the baseplate to the printer base.
- 10. Assemble the printer case.

#### INSTALLING THE MAIN PCB

- 1. Place the insulating plate between the main PCB and the common baseplate.
- 2. Install and tighten the four screws ( $\#6-32\times1/4$  PHIL HD) and lockwashers (#6 split ring) to secure the PCB to the baseplate.

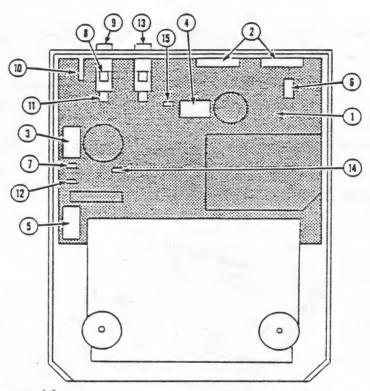


- 3. Connect the AC powerline leads as follows:
  - a. Green wire (ground) with the ring tongue terminal under the screw on the small square baseplate tab above and to the left of the fuse holders (#10).
  - b. Hot wire faston to the center tab of the outside (120 VAC) fuse holder (#11).
  - c. Neutral wire faston to the front AC tab of the two located toward the front of the main PCB's lefthand side (#12).
- 4. Connect the red 40 VAC fuse assembly lead to the +40 tab located in the left forward quarter of the main PCB (#14).

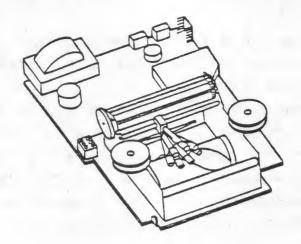
5. Connect the black 40 VAC fuse assembly lead to the +40 tab located in the middle and toward the back of the main PCB (#15).

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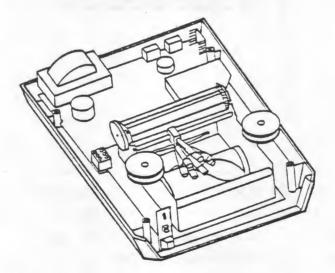
- 6. Connect the power switch PCB wiring harness plug (non polarized white, orange and yellow, #6) to the jack in the right rear corner of the main PCB. The white lead must be toward the front of the PCB.
- 7. Connect the power switch PCB harness! red lead to the top tab of the 120 VAC fuse holder (#8).



- 8. Connect the power switch PCB harness' black lead to the rear AC tab of the two located toward the front of the main PCB's lefthand side (#7).
- 9. Connect the printhead wiring harness (polarized gray and brown) to the main PCB (middle black socket, #4).
- 10. Connect the print motor/print OK switch wiring harness (polarized red, white, blue and black) to the main PCB (left side, forward corner white socket, #5).



- 11. Assemble the transformer to the common baseplate (screws #8 32 x 3/8 PHIL HD, nuts #8 32 STD, lockwashers #8 split ring). The two black leads exit the transformer from the top, and the red and orange leads from the bottom.
- 12. Connect the transformer wiring harness (polarized black, red and orange) to the main PCB (left side, middle white socket, #3).



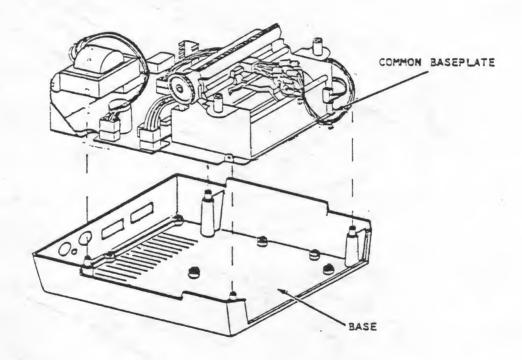
- 13. Attach the common baseplate to the printer base.
- 14. Assemble the printer case.

#### INSTALLING THE COMMON BASEPLATE

- 1. Install the rubber isolation washers on each of the eight printer base bosses.
- 2. Lower the common baseplate into the printer base.

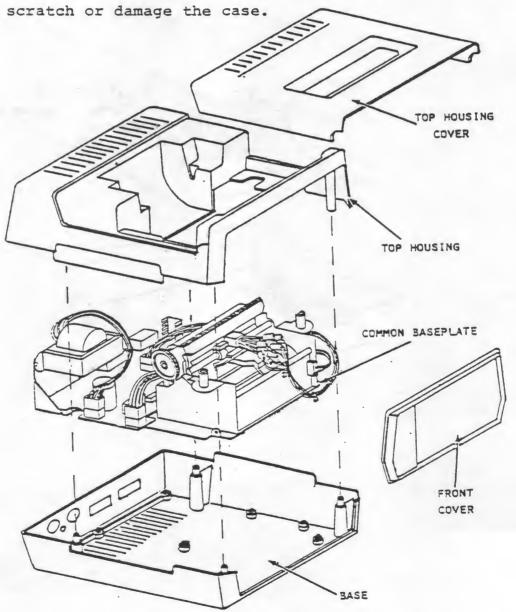
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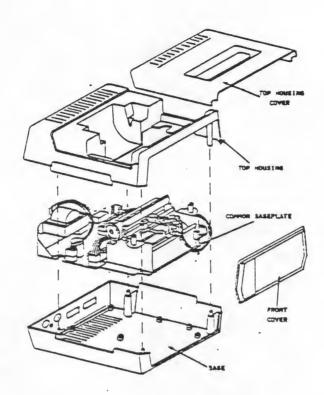
- 3. Install and tighten the eight screws securing the baseplate to the base (#6 32 x 1/2 BT PHIL HD).
- 4. Install the two fuses at the rear of the base.
- 5. Assemble the printer case.



#### PRINTER CASE

- 1. Assemble the power switch PCB to the printer's front cover using the two #6 x 3/8 BT PHIL HD screws.
- 2. Assemble the front cover to its locating slots in the base.
- 3. Assemble the top housing to the base.
- 4. Hold the top housing and base together and turn the assembly upside down. Lay on a surface that will not





- 5. Install and tighten the four screws securing the top housing to the base ( $\#6-32 \times 3/4$  SHT MTL PHIL HD).
- 6. Install the four rubber feet over the screw holes.
- 7. Turn the assembly rightside up.
- 8. Insure that the printhead is in its left-most position.
- 9. Refer to the ADJUSTMENTS section of this manual and complete the printhead-to-platen gap adjustment procedures.
- 10. Install the paper and ribbon following the procedures found in the Printer Operators Manual.
- 11. Assemble the top housing cover to the printer.
- 12. Complete the printer quick check found in the CHECK-OUT section of this manual.

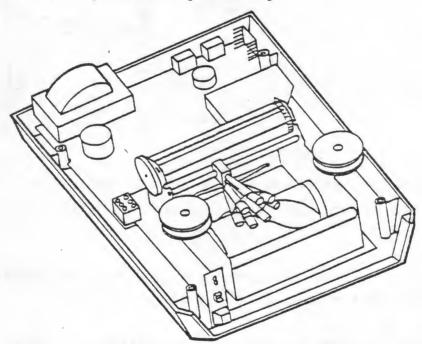


## ATARI 820 PRINTER ADJUSTMENTS

#### DRIVEBELT TENSION

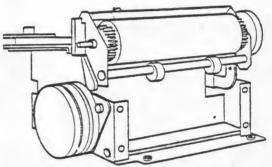
This procedure requires the use of an ATARI 400/800 Computer Console to command the printer. Also, the adjustment can only be completed after removing the printer top housing (refer to the Disassembly procedure in this manual).

1. Remove the printer top housing.

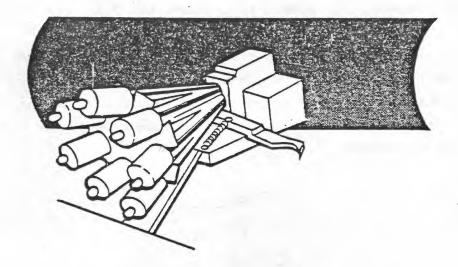


- 2. Following the instructions in the Printer Operators Manual, couple the printer to the computer console. Also, install the paper and ribbon into the printer, laying the paper roll behind the printer base.
- 3. Using the printer quick-check program, command the printer to print several lines of characters.

- 4. Verify that the printing meets the requirements called for in the SPECIFICATIONS section of this manual; if so, reassemble the printer, if not, proceed with the following steps.
- 5. Drivebelt misadjustment could cause the following problems:
  - a. If too tight, the printhead drive cam will bind and the print motor will stall.
  - b. If too loose, character widths and line spacings will vary.



- 6. Locate and slightly loosen the two bolts securing the print motor to the printer mechanism right sideplate.
- 7. Move the motor forward or backward as necessary to achieve proper belt tension.
- 8. Repeat steps 2 and 4 as necessary. Tighten the motor bolts.
- 9. Reassemble the printer case.



This procedure can be completed with only the top housing cover removed from the case. However, the paper and ribbon must also be removed.

- 1. Remove the printer top housing cover.
- 2. Remove the paper and ribbon spools.

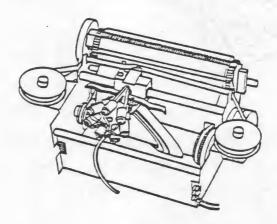
CAUTION: Insure that the printhead is in its left-most position before attempting to move the paper into or out of the printer platen.

3. Use a feeler gage to measure the printhead-to-platen gap across the full print area. The printhead can be moved across the print area by carefully rotating the printhead drive cam.

CAUTION: Rotate the top of the cam toward the rear of the printer only. Rotating the cam in the reverse direction may damage the print OK switch.

The printhead-to-platen gap should be .012" to .015".

4. If the gap is within tolerance and you are not finishing a reassembly, replace the housing cover and complete the printer quick check found in the checkout section of this manual. Otherwise, complete the following steps.



- 5. Locate and slightly loosen the two hexhead screws securing the printhead guidbar to the printer mechanism right and left sideplates.
- 6. Move the guidebar forward or backward as necessary to achieve the required gap.
- 7. Tighten the guidebar screws.
- 8. Insure the printhead is in its left-most position and install the paper and ribbon following the procedures found in the Printer Operators Manual.
- 9. Replace the housing cover and complete the printer quick check found in the CHECKOUT section of this manual.

ATARI 820 PRINTER PARTS LIST



90	02	03	03	03	0.1	03	02		02	03	02	0.1	0.1	01	01	01	01	01	
C014180-	C014179-	C014181-	C014181-	C014181-	C014181-	C014181-	C014181-	C014773	C014179-	C014180-	C014181-	C014181-	C014181-	C014181-	C014181-	C014181-	C014181-	C014181-	C014369
AXIAL	=	2	=	=	=	=		RADIAL	AXIAL	=		=	=	=	=	=	=	=	RADIAL
CERAMIC	=	=	:	=	=	:	:	ELEC.	CERAMIC	=	=	=	=	=	2			2	ELEC.
CAPACITOR	=	=	=	:			:	=	=		:	:	=	•	=	:	=	=	:
108	10%	+80-208	+80-20%	+80-208	+80-20%	+80-208	+80-208	+75-10%,16V	10%	208	+80-20%	+80-208	+80-208	+80-208	+80-208	+80-208	+80-208	+80-208	+75-108,35V
470pf	47pf	·luf	·luf	.luf	.00luf	·luf	.0luf	1.0uf	47pf	100pf	.0luf	.00luf	.001uf	.00luf	.00luf	.00luf	.001uf	.001uf	4.7uf
C101	C102	. C103	C104	C105	C106	C107	C108	C109	C110	C1111	C112.	C113	C114	C115	C116	C117	C118	C119	C120
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4.7 +75-10%,35V """"""""  4.7 +75-10%,35V """"""""""""""""""""""""""""""""""""	C122	4.7	+75-108,350	=	=	=	C014369
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4.7 +75-10%,35V " " " " " " " " "	C124	4.7	+75-108,350	=	=	=	C014369
4.7 +75-10%,35V " " " " " " " " " " " " " " " " " " "	C125	4.7	+75-108,350	2	=	=	C014369
100pf 20% CAPACITOR CERAMIC AXIAL  .00luf +80-20% CAPACITOR CERAMIC AXIAL  .00luf +80-20% " " " "  .00luf +80-20% " " " "  .10uf +20% " " AXIAL  .1uf +20% " AXIAL  .1uf +20% " AXIAR  .1uf +20% " AXIAR  .1uf +80-20% " AXIAR	C126	4.7	+75-10%,35V	=	=	=	C014369
.001uf +80-20% CAPACITOR CERAMIC AXIAL 100pf 20% " " " " " " " " " 100pf 20% " CERAMIC AXIAL 100pf 20% " CERAMIC AXIAL 1.2uf 400V " MYLAR 1.2uf 400V " MYLAR 1.2uf +80-20% " CERAMIC AXIAL 4700uf +50-10%,50V " CERAMIC RADIAL A700uf +50-10%,50V " CERAMIC RADIAL	C127	100pf	20%	CAPACITOR	CERAMIC	AXIAL	C014180-03
.001uf +80-20% CAPACITOR CERAMIC AXIAL 100pf 20% " " " " " " " " " " " " " " " " " " "							
100pf 20% """" """"  100pf 20% """" """"  100pf 20% """" """  100pf 20% """" """  100pf 400v """ """ """  1.2uf 400v """ """ """  1.1uf +20% """ """ """ """  1.1uf +20% """ """ """ """ """ """ """ """ """ "	9010	4				3	
100pf 20% """""""""""""""""""""""""""""""""""	C130	.00lur	+80-208	CAPACITOR	CERAMIC	AXIAL	C014181-
.001uf +80-20% """" """  100pf 20% "" CERAMIC AXIAL .1uf +20% "" MYLAR .1uf +20% "" MYLAR .1uf +20% "" MYLAR .1uf +80-20% "" CERAMIC AXIAL .1uf +80-20% "" CERAMIC AXIAL .1uf +80-20% "" CERAMIC RADIAL	C131	100pf	208	=	=	=	C014180-03
100pf 20% " CERAMIC AXIAL .00luf +80-20% " CERAMIC AXIAL .luf +20% " MYLAR .luf +20%,100V " MYLAR .luf +80-20% " CERAMIC AXIAL .luf +80-20% " CERAMIC AXIAL .luf +50-10%,50V " CERAMIC RADIAL	C132	.001uf	+80-208		=	=	C014181-01
.00luf +80-20% " CERAMIC AXIAL .1uf +20% " MYLAR .1uf +20%,100V " MYLAR .1uf +20%,100V " MYLAR .1uf +80-20% " CERAMIC AXIAL .1uf +50-10%,50V " CERAMIC RADIAL .	C133	100pf	20%	:	=	=	C014180-03
.luf	C134	.00luf	+80-20%		CERAMIC	AXIAL	C014181-01
1.2uf 400V " MYLAR .luf +20% " MYLAR .luf +20%,100V " MYLAR .luf +80-20% " CERAMIC AXIAL 4700uf +50-10%,50V " CERAMIC RADIAL	C135	·luf	+20%				C014868
.luf +20% .luf +20%,100V " MYLAR .luf +80-20% " CERAMIC AXIAL 4700uf +50-10%,50V " CERAMIC RADIAL	C136	1.2uf	400V	=.	MYLAR		C014774
.luf +20%,100V " MYLAR .luf +80-20% " CERAMIC AXIAL 4700uf +50-10%,50V " CERAMIC RADIAL	C137	·luf	+20%	=			C014868
.luf +80-208 " CERAMIC AXIAL 4700uf +50-108,50V " CERAMIC RADIAL	C138	·luf	±20%,100V	=	MYLAR		21-101104P
4700uf +50-10%, 50V " CERAMIC RADIAL	C139	.luf	+80-20%	=	CERAMIC	AXIAL	C014181-03
	C140	4700uf	+50-10%,50V	=	CERAMIC	RADIAL	C014375

ATARI   PART		,			part#)													
### PESCRIPTION  4700uf +50-10%,50V CAPACITOR CERAMIC RADIAL  2200uf +50-10%,16V " AXIAL  .22uf " AXIAL  .1uf +80-20% " " " " " " " " " " " " " " " " " " "					(C143 - alternate part#)													
### PESCRIPTION  4700uf +50-10%,50V CAPACITOR CERAMIC RADIAL  2200uf +50-10%,16V " AXIAL  .22uf " AXIAL  .1uf +80-20% " " " " " " " " " " " " " " " " " " "	ATARI PART #	14375	14373	10394	14181-05	14181-03	14181-03	14181-03	14181-03	14181-03	14181-03	14181-03		1-5221	1-5103	1-5393	1-5471	1-5102
FING  4700uf +50-10%,50V CAPACITOR CERAMIC 2200uf +50-10%,16V " POLYFILM .22uf " CERAMIC .1uf +80-20% " " " " .1uf +80-20% " " " .1uf +80-00%								00 "	00 "	00 "	" CO	1 CO						58 14
FNG  4700uf +50-108,50V  2200uf +50-108,16V  .22uf  .22uf  .1uf +80-208  .1uf +80-008  .1uf +80-008  .1uf +80-008  .1uf +80-008  .1uf +80-008  .1uf +80-008				POLYFILM			=		=	=	=			Y.	N.F.	MY	MY	MY
FNG 4700uf +50-10%,50V 2200uf +50-10%,16V .22uf .22uf .1uf +80-20% .1uf +80-00%	DESCRIPTION	CAPACITOR	=	:	=		:							ESISTOR		=	=	=
FNG 4700uf 2200uf .22uf .1uf .luf .luf .luf .luf .luf .luf .luf .l		+50-108.50V	+50-108,16V			+80-208	+80-20%	+80-208	+80-20%	+80-20%	+80-20%	+80-208			0K ohm	9K ohm	70 ohm	K ohm
DRAWIN NUMBER C141 C142 C143 C144 C146 C146 C146 C148 C149 C150 C150 C150 R101 R103 R103 R103	5	4700u£	2200uf	.22uf	.22uf	· luf	·luf	·luf	·luf	.luf	·luf	Juf.		2	1	3	4	1
65	DRAWING	C141	C142	C143		C144	C145	C146	C147			C150		R101	R102	R103	R104	R105

	DRAWING NUMBER		DESCRIPTION		-	ATARI PART#	
	R106	1M ohm	RESISTOR	NA.	5	14-5105	
	R107	100K ohm	=	M.	5	14-5104	
	R108	4.7K ohm	=	34	5%	14-5472	
	R109	27K ohm	=	MA	5%	14-5273	
	R110	1K ohm	=	MA	5.8	14-5102	Ŋ
	R111	47K ohm		MA	58	14-5473	
	R112	4.7K ohm		MA	5	14-5472	
į	R113A-R113H	8x4.7K ohm	RESISTOR NETWORK			C014379	
66	R114	2K ohm	RESISTOR	MA	58	14-5202	
	R115A-R115G	7x470 ohm	RESISTOR NETWORK			C014867	
	.R116	100 ohm	RESISTOR	MAN.	5	14-51.01	
	R118	100 ohm	RESISTOR	MY	5	14-5101	
	R120	100 ohm	RESISTOR	MA	of C	14-5101	
					)		
,	R122	100 ohm	RESISTOR	MA	56	14-5101	
,	R124	100 ohm	RESISTOR	MY	5	14-5101	

ATARI PART #	14-5101	14-5101	14-5104	14-5104	14-5103	14-5472	15-5222	14-5101	14-5331	31-1N914	C014398	C014398							
	58	55 %	58	5	58	58	58	5	5.8										
	WA	MA	MA	MA	MY	MY	MY	MY	MA										
DESCRIPTION	RESISTOR	RESISTOR	=	=	=	=	=	2	=	DIODE		2	=		=		=	=	=
	100 ohm	100 ohm	100K ohm	100K ohm	10K ohm	4.7K ohm	2.2K ohm	100 ohm	330 ohm	1N914	MR501	MR501							
DRAWING	R126	R128	R129	R130	R131	R132	R133	R134	R135	CR101	CR102	CR103	CR104	CR105	CR106	CR107	CR108	CR109	CR110



												PRINTER MECHANISM CA014702						
ATARI PART #	C014398	C014398	31-1N4001	31-1N4001	31-1N4001	31-1N4001	C014777	C014866	C014866	C014866	C014866		33-2N3906	34-2N3904	34-2N3904	C014350	C014350	C014350
DESCRIPTION	DIODE			2		2	LIGHT EMITTING DIODE	FERRITE BEAD				AC SYNCHRONOUS MOTOR	TRANSISTOR			=	2	=
	MR501	MR501	1N4001	1N4001	1N4001	1N4001							2N3906	2N3904	2N3904	TIP122	TIP122	TIP122
DRAWING	CR111	CR112	CR113	CR114	CR115	CR116	CR117	L101	L102	L103	L104	M101	0101	0102	0103	0104	0105	0106



						PRINTER MECHANISM CA014702						IC SOCKET C014386-07	IC SOCKET C014386-08	IC SOCKET C014386-09	IC SOCKET C014386-02	IC SOCKET C014386-02
ATARI PART #	C014350	C014350	C014350	C014350	CA011620-01		C014831	C014316	C014182	46-2032002	46-2032002	C011298	C010745	C010750	C010174	C010174
					MOMENTARY	SPDT N.O.	SPST					24 PIN	28 PIN	40 PIN	14 PIN	14 PIN
DESCRIPTION	TRANSISTOR			=	SWITCH (PAPER ADV)	MICROSWITCH (PRINT OK)	SWITCH (PWR)	CRYSTAL	TRANSFORMER, 120 VAC	FUSE	FUSE	ROM (2048x8 STATIC)	MPU	PIA	TRANSISTOR ARRAY	TRANSISTOR ARRAY
	TIP122	TIP122	TIP122	TIP122				1.000000MHz		2.0A	2.0A	2316	6507	6532	3086	3086
DRAWING NUMBER	0107	0108	0109	0110	5101	5102	8103	X101	T101	F101	F102	A101	A102	A103	A104A-E	A105A-D

DRAWING NUMBER	DESCRIPTION		ATARI PART	
A106	ELECT. RELAY (TRIAC)		C14704	
A107A-E 3086	TRANSISTOR ARRAY	14 PIN	C010174	IC SOCKET C014386-02
A108 78M05	REGULATOR (+5 VDC)		C010819	
3101	CONNECTOR	3 PIN	C014719-01	
J102	CONNECTOR	15 PIN	C014781	
J103	I/O CONNECTOR		C012995	
J104	I/O CONNECTOR		C012995	
J105	CONNECTOR	NId 9	C014794	
J106 .	TERMINAL, PCB		C014797	
J107	TERMINAL, PCB		C014797	
3108	CONNECTOR	NIA 9	C014793	
1109	TERMINAL, PCB		C014797	
J110	TERMINAL, PCB		C014797	

POWER SWITCH PCB ASSY.	CA014166
PCB	C012979
MOMENTARY SWITCH (S101)	CA011620-01
POWER SWITCH (S103)	C014831
L.E.D. (CR117)	C014777
L.E.D. STANDOFF	C014069
3 PIN HEADER (P102)	79-58104
POWER & ADVANCE CABLE ASSY.	CA014792
ADVANCE BUTTON (PLASTIC)	C014056
SCREWS (2) #6x3/8 BT PHIL HD	82-AL606
COMMON BASEPLATE ASSY.	CA014168
COMMON BASEPLATE	C012977 -
BASEPLATE INSULATOR	C014326
MAIN PCB ASSY	CA014835
SCREWS $(4) #6-32x1/4$ PHIL HD	72-16045
LOCKWASHERS (4) #6 SPLIT RING	75-046
FUSE HOLDER ASSY (F101)	CA014838
FUSE HOLDER (F101/F102)	C014783
TRANSFORMER (T101) ASSY.	C014182
SCREWS (2) #8-32x3/8 PHIL HD	72-18065
NUTS (2) #8-32 STD	75-9185
LOCKWASHERS (2) #8 SPLIT RING	75-048
PRINTER MECHANISM	CA014702
SCREWS (3) #8-32x3/8 PHIL HD	72-18065
LOCKWASHERS (3) #8 SPLIT RING	75-048
POWER CORD ASSY.	CA014784
STRAIN RELIEF BUSHING	78-2115
SCREW (1) #6-32x5/16 THD PHIL HD	72-CL605

SOURCE: CA014140-XX REV 4

PRINTER CASE	
FRONT PANEL	C012975
LOGO LABEL	C014039
NAME PLATE LABEL	C014084
TOP HOUSING COVER	C012974
TOP HOUSING	C012973
PAPER ROLL LABEL	C014713
BASE	C012972
RUBBER ISOLATION WASHERS (8)	88-1010
SCREWS (8) #6-32x1/2 BT PHIL HD	82-AL608
SCREWS (4) #6-32x3/4 SHT MTL PHIL HD	75-AL612
RUBBER FEET (4)	88-1004
CONNECTOR LABEL	C014087
PAPER ROLL	C014062
PAPER MANDREL	C014853
RIBBON SPOOL	C014854
PRINTER OPERATORS MANUAL	C014762

SOURCE: CA014140-XX REV 4

## APPENDIX A

ILLUSTRATION #	DESCRIPTION
1	Main PCB Silkscreen
2	Main PCB Chipping Chart & RF Shield
3	Power Switch PCB Wiring Harness
	Connection
4	Printhead and Print Motor/Print OK
	Switch Harness Connector Pin Assignments
5	Power Cord Polarity
6	820 Printer Schematic



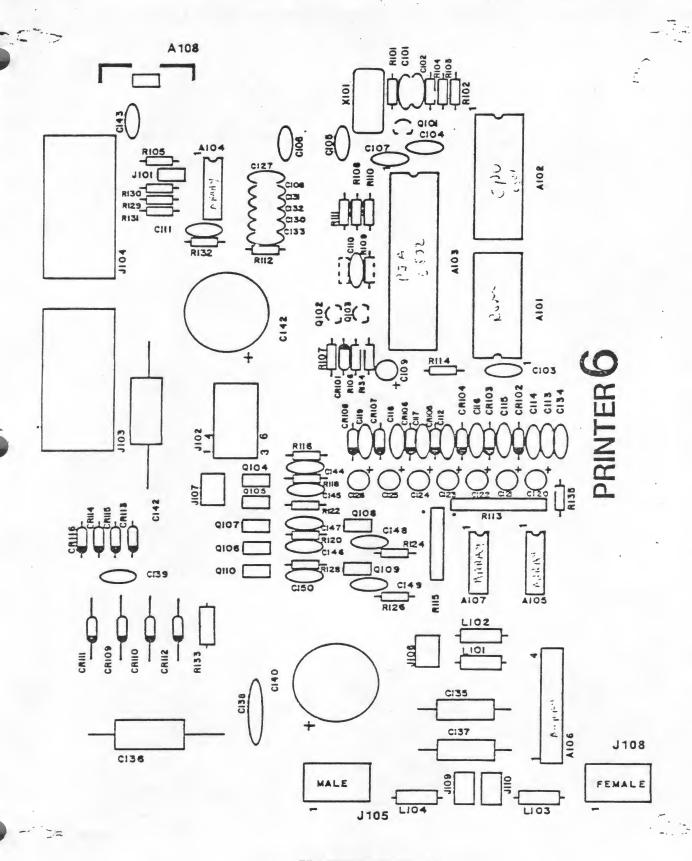
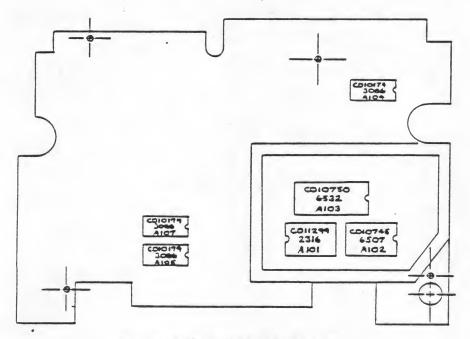
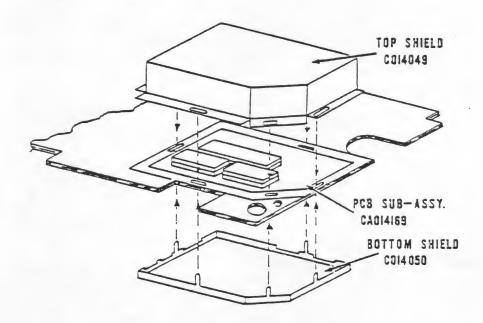


ILLUSTRATION #1





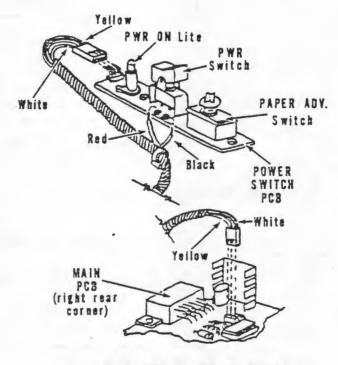
MAIN PCB CHIPPING CHART



SOURCE: DRWG CA014835 lof2, REV 2

ILLUSTRATION #2





POWER SWITCH PCB HARNESS

SOURCE: CA014163

lofl, REV 4

CA014166 lof1, REV 1

ILLUSTRATION #3

1	2	3
4	5	<b>§</b>
1	3	3
10	11	12
13	14	15
Ding -	Board	Side

PINS	DIOKAJOS
1.8	1
2,9	2
3.10	3
4.11	4
5.12	5
6.13	6
7.14	7

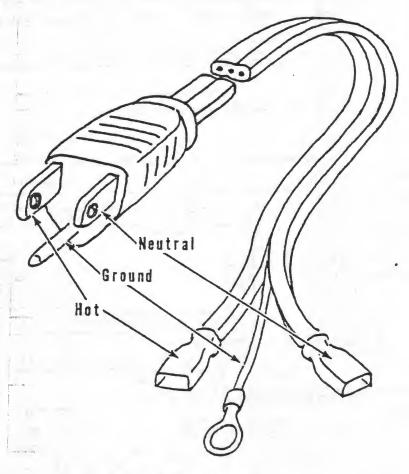
## PRINTHEAD HARNESS CONNECTOR

3	6
2	5
1	4

	LEAD	PINS
MOTOR	BLACX	1,2
MUIUN	WHITE	3,4
SWITCH	BLUE	5
241104	RED	6

(Plug-Board Side)

PRINT MOTOR/PRINT OK SWITCH HARNESS CONNECTOR .



AC POWER CORD

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